

Grass Systematics. By FRANK W. GOULD. xi + 382 pp., illustrated. McGraw-Hill Book Co., New York. 1968. \$14.50.

This well designed book brings grass taxonomy up to date. In a systematic and careful approach Professor Gould has covered all of the classical aspects of grass taxonomy, and has superimposed upon them the more recent developments in the field. Thus the introductory three chapters, and part of the fourth, cover microscopic characters such as epidermal and cytological studies, data from biochemical studies, physiological, ecological and genetic aspects in addition to the expected discussion of gross vegetative and spikelet morphology. A good balance between coverage and depth has been achieved; the reader is given basic information on a topic and liberal references to individual papers should he wish further information. The illustrations in this section are well chosen and well executed.

The discussion of characters is concluded in chapter four with the presentation of a classification system, essentially following that of Stebbins and Crampton (Rec. Adv. Bot. 1: 133-145, 1961). To those systematists raised on the manuals and revisions of Hitchcock and Chase this system is radically different, both in the number of subfamilies as well as their generic content. Essentially many genera formerly included in the Festucoideae have been shifted to new subfamilies which reflect more accurately the correlation of new characters with the old. Especially clever are the maps showing relative geographic representation of these subfamilies.

Chapter five includes keys to and descriptions of the genera of grasses in the United States. The generic key is basically artificial. While I have not had the opportunity to use the key at length, a few chosen genera keyed out with no difficulty.

Most of the genera treated will be familiar but a few unfamiliar names appear, mostly following usage now common in other countries, especially European, or as the result of relatively recent monographs and revisions. Among the "new" names not often seen previously in American agrostological literature are the following examples. The annual species of *Festuca*, often treated in U.S. manuals as the section *Vulpia* of that genus, are given generic status. *Elymus caput-medusae* becomes *Taeniatherum caput-medusae*. *Trichachne* is placed in *Digitaria*. *Paspalidium* is recognized, containing two U.S. species placed in *Panicum* by Hitchcock. The four U.S. species in *Panicum* subgen. *Paurochaetium* are in *Setaria*, following a recent monograph of the latter. *Andropogon*, *Bothriochloa* and *Schizachrium* are recognized instead of the single genus *Andropogon* following current thinking of workers in that group. *Neeragrostis* is recognized, containing the former *Eragrostis reptans* as its single species. *Erioneuron*, contains five species, all placed in *Tridens* by Hitchcock. *Allolepis* contains one of the species formerly included in *Distichlis*, *D. texana*. *Uniola* has lost some of its species to *Chasmanthium*, again reflecting a recent monograph. *Ventenata dubia*, reported for the U.S. since Hitchcock's Manual is included. No new combinations are made. Representative species of many genera are illustrated. Most of the drawings are good, some are excellent, some over-shaded or over-reduced. The placement of some drawings leaves as much as one-half of the page blank contributing to a "clean" appearance, but wasting space.

The final chapter is devoted to a discussion of grassland associations in North America, with the recognition of seven associations: true prairie, coastal prairie, mixed prairie, fescue prairie, palouse prairie, pacific prairie and desert plains grassland.

A short appendix on the preparation of specimens concludes the basic part of the book.

Considering its size, but not its value, the book is overpriced, but perhaps we have been spoiled by the past availability of Hitchcock's *Manual* at such a low price.—DENNIS ANDERSON, Division of Biological Sciences, Humboldt State College, Arcata, California.